

1 **LISTING OF CLAIMS**

2 Please amend the claims of the present application as set forth below. More
3 specifically, a detailed listing of all claims has been provided. This listing of claims will
4 replace all prior versions and listings of claims in the application. Changes to the claims
5 are shown by strikethrough or double brackets (for deleted matter) and underlining (for
6 added matter).

7 Upon entry of this Response, claims 1-6, 8-15, 17-30, and 32-50 will be pending.
8 More specifically, the status of the claims will be as indicated below:

- 9 a) Claims 1, 9, 24, 27, and 29 are currently amended;
10 b) Claims 2-6, 10-15, 26, and 28 are original;
11 c) Claims 8, 17-23, 25, 30, 32-50 were previously presented; and
12 d) Claims 7, 16, and 31 are canceled.

13

14 **Listing of Claims**

15 1. (Currently amended) A server system, comprising:
16 one or more computers;
17 an application executing on the computers to receive and process client requests;

18 and

19 a constraint system to constrain operation of the application according to multiple
20 different constraints, the constraint system comprising a hierarchy of constraint layers,
21 with each constraint layer containing a set of one or more constraints that customize
22 operation of the application, wherein the constraint layers in the hierarchy have different
23 respective priorities associated therewith,

24 wherein the constraint layers are organized within the hierarchy to provide a
25 relation between a first constraint layer and a lower-priority second constraint layer such

1 that the first constraint layer precludes behavior defined by the second constraint layer if
2 the behavior of the second constraint layer conflicts with behavior defined by the first
3 constraint layer, but the second constraint layer does not constrain the first constraint
4 layer, wherein the relation between the first constraint layer and the second constraint
5 layer holds even when the first constraint layer is applied prior to the second constraint
6 layer.

7
8 2. (Original) A server system as recited in claim 1, wherein the hierarchy
9 comprises a constraint layer that contains legally mandated constraints to constrain
10 operation of application according to legal principles.

11
12 3. (Original) A server system as recited in claim 1, wherein the hierarchy
13 comprises a constraint layer that contains company-mandated constraints to constrain
14 operation of the application according to preferences of a company that operates the
15 application.

16
17 4. (Original) A server system as recited in claim 1, wherein the hierarchy
18 comprises a constraint layer that contains customer constraints to constrain operation of
19 the application according to preferences of customers.

20
21 5. (Original) A server system as recited in claim 1, wherein the hierarchy
22 comprises a constraint layer that contains cultural constraints to constrain operation of the
23 application according to cultural aspects.

1 6. (Original) A server system as recited in claim 1, wherein the hierarchy
2 comprises a constraint layer that contains end user constraints to constrain operation of
3 the application according to preferences of an end user.

4
5 7. (Canceled).

6
7 8. (Previously presented) A server system as recited in claim 1, further comprising
8 a constraint resolver to resolve the constraint layers so that operation of the application is
9 constrained by a sum of the constraints in the layers, wherein the constraint resolver is
10 configured to reconcile any conflicts among constraints imposed by different constraint
11 layers.

12
13 9. (Currently amended) A server system comprising:
14 one or more computers; and
15 a multi-layer application executing on the computers to handle client requests, the
16 multi-layer application comprising:

17 a problem-solving logic layer to process the client requests according to an
18 associated problem domain, the problem-solving logic layer containing one or more
19 execution models to perform various sets of tasks when processing the client requests, the
20 problem-solving logic layer producing replies to the client requests;

21 a presentation layer to structure the replies produced by the problem-solving logic
22 layer in a manner that makes the replies presentable on various client devices; and

23 a constraint hierarchy of multiple constraint layers, each constraint layer
24 containing a set of one or more constraints that specify how the replies should be

1 structured to customize the replies for specific sets of conditions, wherein the constraint
2 layers in the hierarchy have different respective priorities associated therewith,

3 wherein the constraint layers are organized within the hierarchy to provide a
4 relation between a first constraint layer and a lower-priority second constraint layer such
5 that the first constraint layer precludes behavior defined by the second constraint layer if
6 the behavior of the second constraint layer conflicts with behavior defined by the first
7 constraint layer, but the second constraint layer does not constrain the first constraint
8 layer, wherein the relation between the first constraint layer and the second constraint
9 layer holds even when the first constraint layer is applied prior to the second constraint
10 layer.

11
12 10. (Original) A server system as recited in claim 9, wherein constraint layers can
13 be selectively added or removed from the constraint hierarchy independently of other
14 layers in the multi-layer application to produce different sets of constraints.

15
16 11. (Original) A server system as recited in claim 9, wherein the constraint
17 hierarchy comprises a constraint layer that contains legally mandated constraints that
18 constrain the presentation layer to structure the replies to comply with certain legal
19 principles.

20
21 12. (Original) A server system as recited in claim 9, wherein the constraint
22 hierarchy comprises a constraint layer that contains company-mandated constraints that
23 constrain the presentation layer to structure the replies according to preferences of a
24 company that operates the application.

1 13. (Original) A server system as recited in claim 9, wherein the constraint
2 hierarchy comprises a constraint layer that contains customer-oriented constraints that
3 constrain the presentation layer to structure the replies according to preferences of
4 customers.

5
6 14. (Original) A server system as recited in claim 9, wherein the constraint
7 hierarchy comprises a constraint layer that contains cultural constraints that constrain the
8 presentation layer to structure the replies according to cultural aspects.

9
10 15. (Original) A server system as recited in claim 9, wherein the constraint
11 hierarchy comprises a constraint layer that contains end user constraints that constrain the
12 presentation layer to structure the replies according to preferences of end users.

13
14 16. (Canceled).

15
16 17. (Previously presented) One or more computer-readable media comprising
17 computer-executable instructions that, when executed, implement a computer software
18 architecture on one or more computers, the architecture comprising:

19 a constraint hierarchy of multiple constraint layers, each constraint layer
20 containing a set of one or more constraints that constrain operation of an application, the
21 constraint layers being organized within the constraint hierarchy such that a first
22 constraint layer limits a second constraint layer but the second constraint layer does not
23 limit the first constraint layer; and

24 a constraint resolver to resolve the constraint layers so that operation of the
25 application is constrained by a set of the constraints in the constraint layers, wherein the

1 constraint resolver is configured to reconcile any conflicts among constraints imposed by
2 different constraint layers.

3
4 18. (Previously presented) The one or more computer-readable media as recited in
5 claim 17, wherein constraint layers are selectively added to or removed from the
6 constraint hierarchy to form different sets of constraints on the operation of the
7 application.

8
9 19. (Previously presented) The one or more computer-readable media as recited in
10 claim 17, wherein the constraint hierarchy comprises a constraint layer that contains
11 legally mandated constraints to constrain operation of the application according to legal
12 principles.

13
14 20. (Previously presented) The one or more computer-readable media as recited in
15 claim 17, wherein the constraint hierarchy comprises a constraint layer that contains
16 company-mandated constraints to constrain operation of the application according to
17 preferences of a company that operates the application.

18
19 21. (Previously presented) The one or more computer-readable media as recited in
20 claim 17, wherein the constraint hierarchy comprises a constraint layer that contains
21 customer constraints to constrain operation of the application according to preferences of
22 customers.

1 22. (Previously presented) The one or more computer-readable media as recited in
2 claim 17, wherein the constraint hierarchy comprises a constraint layer that contains
3 cultural constraints to constrain operation of the application according to cultural aspects.

4

5 23. (Previously presented) The one or more computer-readable media as recited in
6 claim 17, wherein the constraint hierarchy comprises a constraint layer that contains end
7 user constraints to constrain operation of the application according to preferences of an
8 end user.

9

10 24. (Currently amended) A method implemented on one or more computers
11 comprising:

12 storing a hierarchy of constraints, each constraint being configured to constrain
13 operation of a server application, wherein the constraints in the hierarchy have different
14 respective priorities associated therewith; and

15 evaluating an operation of the server application in view of the hierarchy of
16 constraints to modify operation according to the constraints in the hierarchy,

17 wherein the constraints are organized within the hierarchy to provide a relation
18 between a first constraint and a lower-priority second constraint such that the first
19 constraint precludes behavior defined by the second constraint if the behavior of the
20 second constraint conflicts with behavior defined by the first constraint, but the second
21 constraint does not constrain the first constraint, wherein the relation between the first
22 constraint and the second constraint holds even when the first constraint is applied prior
23 to the second constraint.

1 25. (Previously presented) A method as recited in claim 24, further comprising
2 adding or removing constraints from the hierarchy to alter the server application.

3
4 26. (Original) A method as recited in claim 24, wherein the hierarchy of
5 constraints comprises constraints selected from a group of constraints comprising:

6 legally mandated constraints to constrain operation of the application according to
7 legal principles;

8 company-mandated constraints to constrain operation of the application according
9 to preferences of a company that operates the application;

10 customer constraints to constrain operation of the application according to
11 preferences of customers;

12 cultural constraints to constrain operation of the application according to cultural
13 aspects; and

14 end user constraints to constrain operation of the application according to
15 preferences of an end user.

16
17 27. (Currently amended) A method for operating a server application, comprising:

18 receiving requests from multiple clients;

19 processing the requests to produce replies;

20 structuring the reply to define how the reply will appear when presented at the
21 client; and

22 constraining said structuring according to a hierarchy of plural constraints to
23 customize appearance of the reply, wherein the constraints in the hierarchy have different
24 respective priorities associated therewith, wherein the constraints are organized within
25 the hierarchy to provide a relation between a first constraint and a lower-priority second

1 constraint such that the first constraint precludes behavior defined by the second
2 constraint if the behavior of the second constraint conflicts with behavior defined by the
3 first constraint, but the second constraint does not constrain the first constraint, wherein
4 the relation between the first constraint and the second constraint holds even when the
5 first constraint is applied prior to the second constraint, the constraints comprising one or
6 more of:

7 legally mandated constraints to constrain appearance of the reply according to
8 legal principles;

9 company-mandated constraints to constrain appearance of the reply according to
10 preferences of a company that operates the application;

11 customer constraints to constrain appearance of the reply according to preferences
12 of customers;

13 cultural constraints to constrain appearance of the reply according to cultural
14 aspects; and

15 end user constraints to constrain appearance of the reply according to preferences
16 of an end user.

17
18 28. (Original) A method as recited in claim 27, further comprising adding or
19 removing constraints to change the set of constraints being applied to the structuring of
20 the reply.

21
22 29. (Currently amended) One or more computer-readable media comprising
23 computer-executable instructions that, when executed, direct an application server to:

24 generate replies in response to client requests; and

1 structure the replies according to a hierarchy of constraints to customize the
2 replies, wherein the constraints in the hierarchy have different respective priorities
3 associated therewith, wherein the constraints are organized within the hierarchy to
4 provide a relation between a first constraint and a lower-priority second constraint such
5 that the first constraint precludes behavior defined by the second constraint if the
6 behavior of the second constraint conflicts with behavior defined by the first constraint,
7 but the second constraint does not constrain the first constraint, wherein the relation
8 between the first constraint and the second constraint holds even when the first constraint
9 is applied prior to the second constraint, the constraints comprising a combination of one
10 or more following constraints:

11 legally mandated constraints to constrain appearance of a reply according to legal
12 principles;

13 company-mandated constraints to constrain appearance of the reply according to
14 preferences of a company that operates the application;

15 customer constraints to constrain appearance of the reply according to preferences
16 of customers;

17 cultural constraints to constrain appearance of the reply according to cultural
18 aspects; and

19 end user constraints to constrain appearance of the reply according to preferences
20 of an end user.

21
22 30. (Previously presented) A server system as recited in claim 1, wherein the
23 constraints are expressed as metadata.

24
25 31. (Canceled).

1
2 32. (Previously presented) A server system as recited in claim 1, wherein the
3 constraints define presentation aspects of a reply sent to a customer.

4
5 33. (Previously presented) A server system as recited in claim 1, wherein each
6 constraint layer represents a different source entity that customizes the application.

7
8 34. (Previously presented) A server system as recited in claim 9, wherein each
9 constraint layer represents a different source entity that customizes the application.

10
11 35. (Previously presented) The one or more computer-readable media as recited in
12 claim 17, wherein each constraint layer represents a different source entity that
13 customizes the application.

14
15 36. (Previously presented) A method as recited in claim 24, wherein the hierarchy
16 includes multiple constraint layers, and wherein each constraint layer represents a
17 different source entity that customizes the application.

18
19 37. (Previously presented) A method as recited in claim 27, wherein the
20 constraints are associated with a hierarchy having multiple constraint layers, and wherein
21 each constraint layer represents a different source entity that customizes the application.

22
23 38. (Previously presented) The one or more computer-readable media of claim 29,
24 wherein the hierarchy includes multiple constraint layers, and wherein each constraint
25 layer represents a different source entity that customizes the application.

1
2 39. (Previously presented) A server system as recited in claim 1, wherein the
3 hierarchy comprises each of:

4 a constraint layer that contains legally mandated constraints to constrain operation
5 of application according to legal principles;

6 a constraint layer that contains company-mandated constraints to constrain
7 operation of the application according to preferences of a company that operates the
8 application;

9 a constraint layer that contains customer constraints to constrain operation of the
10 application according to preferences of customers;

11 a constraint layer that contains cultural constraints to constrain operation of the
12 application according to cultural aspects;

13 a constraint layer that contains end user constraints to constrain operation of the
14 application according to preferences of an end user.

15
16 40. (Previously presented) A server system as recited in claim 9, wherein the
17 constraint hierarchy comprises each of:

18 a constraint layer that contains legally mandated constraints that constrain the
19 presentation layer to structure the replies to comply with certain legal principles;

20 a constraint layer that contains company-mandated constraints that constrain the
21 presentation layer to structure the replies according to preferences of a company that
22 operates the application;

23 a constraint layer that contains customer-oriented constraints that constrain the
24 presentation layer to structure the replies according to preferences of customers;

1 a constraint layer that contains cultural constraints that constrain the presentation
2 layer to structure the replies according to cultural aspects; and

3 a constraint layer that contains end user constraints that constrain the presentation
4 layer to structure the replies according to preferences of end users.

5
6 41. (Previously presented) The one or more computer-readable media as recited in
7 claim 17, wherein the constraint hierarchy comprises each of:

8 a constraint layer that contains legally mandated constraints to constrain operation
9 of the application according to legal principles;

10 a constraint layer that contains company-mandated constraints to constrain
11 operation of the application according to preferences of a company that operates the
12 application;

13 a constraint layer that contains customer constraints to constrain operation of the
14 application according to preferences of customers;

15 a constraint layer that contains cultural constraints to constrain operation of the
16 application according to cultural aspects; and

17 a constraint layer that contains end user constraints to constrain operation of the
18 application according to preferences of an end user.

19
20 42. (Previously presented) A method as recited in claim 24, wherein the hierarchy
21 of constraints comprises each of:

22 legally mandated constraints to constrain operation of the application according to
23 legal principles;

24 company-mandated constraints to constrain operation of the application according
25 to preferences of a company that operates the application;

1 customer constraints to constrain operation of the application according to
2 preferences of customers;

3 cultural constraints to constrain operation of the application according to cultural
4 aspects; and

5 end user constraints to constrain operation of the application according to
6 preferences of an end user.

7
8 43. (Previously presented) A method as recited in claim 27, wherein the
9 constraints comprise each of the legally mandated constraints, the company-mandated
10 constraints, the customer constraints, the cultural constraints, and the end user
11 constraints.

12
13 44. (Previously presented) The one or more computer-readable media of claim 29,
14 wherein the constraints comprise each of the legally mandated constraints, the company-
15 mandated constraints, the customer constraints, the cultural constraints, and the end user
16 constraints.

17
18 45. (Previously presented) A server system as recited in claim 39, wherein the
19 constraint hierarchy orders the constraints from highest priority to lowest priority in an
20 order defined by: 1) the legally mandated constraints; 2) the company-mandated
21 constraints; 3) the customer constraints; 4) the cultural constraints; and 5) the end user
22 constraints.

23
24 46. (Previously presented) A server system as recited in claim 40, wherein the
25 constraint hierarchy orders the constraints from highest priority to lowest priority in an

1 order defined by: 1) the legally mandated constraints; 2) the company-mandated
2 constraints; 3) the customer constraints; 4) the cultural constraints; and 5) the end user
3 constraints.

4

5 47. (Previously presented) The one or more computer-readable media as recited in
6 claim 41, wherein the constraint hierarchy orders the constraints from highest priority to
7 lowest priority in an order defined by: 1) the legally mandated constraints; 2) the
8 company-mandated constraints; 3) the customer constraints; 4) the cultural constraints;
9 and 5) the end user constraints.

10

11 48. (Previously presented) A method as recited in claim 42, wherein the constraint
12 hierarchy orders the constraints from highest priority to lowest priority in an order
13 defined by: 1) the legally mandated constraints; 2) the company-mandated constraints; 3)
14 the customer constraints; 4) the cultural constraints; and 5) the end user constraints.

15

16 49. (Previously presented) A method as recited in claim 43, wherein the constraint
17 hierarchy orders the constraints from highest priority to lowest priority in an order
18 defined by: 1) the legally mandated constraints; 2) the company-mandated constraints; 3)
19 the customer constraints; 4) the cultural constraints; and 5) the end user constraints.

20

21 50. (Previously presented) The one or more computer-readable media of claim 44,
22 wherein the constraint hierarchy orders the constraints from highest priority to lowest
23 priority in an order defined by: 1) the legally mandated constraints; 2) the company-
24 mandated constraints; 3) the customer constraints; 4) the cultural constraints; and 5) the
25 end user constraints.